

Texas A&M University-San Antonio
Department of Computational, Engineering, and Mathematical Sciences
Math 2312-005/Math 2012-005: Pre-Calculus
Fall 2025

Instructor: [Dr. Jingbo Liu](#)

Class Meeting: [MWF 12:00pm-12:50pm](#)

Recitation Meeting: [W 1:00pm-1:50pm](#)

Classroom: [Hall 309](#)

[\(Please contact me via emails rather than through other platforms\)](#)

Office Hours: [MW: 11:00am-12:00pm; 3:30pm-4:30pm, or by appointment.](#)

NOTE: I reserve the right to modify/update the information of this syllabus as appropriate.

Credit Hours: **3**

Office Phone: [\(210\) 784-2812](#)

Office: [Hall 314T](#)

E-mail: jliu@tamusa.edu

Course Description and Material

Catalog Description: In-depth study and applications of inverse functions, and exponential and logarithmic functions. Trigonometry is an additional major topic mainly including angle measurement, trigonometric functions and their graphs, inverse trigonometric functions, trigonometric identities and equations, and law of sines and cosines.

Prerequisite: Math 1314 College Algebra with a grade 'C' or higher.

Required Textbook: Pre-Calculus Essentials by Robert F. Blitzer (6th edition) with MyLab Math. Pearson Publishing with ISBN-13: 9780136906551.

NOTE: Please find the instructions on the Blackboard for the registration.

Other Materials: Scientific calculators can be used for in-class activities, and TI-30XIIS is recommended.

NOTE: TI-83 or higher calculators, laptops, cell phones, and any other electronic/mobile devices will **NOT** be acceptable for the quizzes/tests/exams.

Student Learner Objectives: Upon completion of this course, you will:

1. Demonstrate understanding and knowledge of properties of functions from graphical, tabular, symbolic, or verbal representations.
2. Identify and apply appropriate strategies for solving equations involving algebraic, transcendental and trigonometric functions.
3. Interpret and apply graphing techniques to algebraic and transcendental functions.
4. Compute and apply the values of trigonometric functions for key angles in all quadrants of the unit circle measured in both degrees and radians.
5. Prove and apply trigonometric identities.
6. Interpret and solve applications related to right and oblique triangles.

MATH 2312 helps students develop critical thinking, communication, empirical and quantitative reasoning skills, with an emphasis on understanding the key mathematical concepts needed for calculus readiness. You will practice recognizing, identifying, solving, and analyzing problems, as well as effectively explaining and modeling real-world situations.

List of Topics: Topics to be covered include but are not limited to the following:

1. More on functions and their graphs (Section 1.3)
2. Exponential and logarithmic functions (Sections 3.1~3.2)
3. Properties of logarithms (Sections 3.3)
4. Exponential and logarithmic equations with applications (Sections 3.4~3.5)

Test 1 covers Chapters 1~3 (only selected important topics)

5. Angles and their measures (Section 4.1)
6. Trigonometric functions and right triangle trigonometry (Sections 4.2~4.3)
7. Trigonometric functions of any angle (Section 4.4)
8. Graphs of sine and cosine and other trigonometric functions (Sections 4.5~4.6)
9. Inverse trigonometric functions (Section 4.7)

Test 2 covers Chapters 4 (only selected important topics)

10. Trigonometric identities and trigonometric formulae (Sections 5.1~5.3)
11. Trigonometric equations (Section 5.5)
12. The laws of sines and cosines (Sections 6.1~6.2)

Test 3 covers Chapters 5 (only selected important topics)

13. Polar coordinates and Graphs of Polar Equations (Sections 6.3~6.4)
14. Vectors and Dot Product (Sections 6.6~6.7)

Cumulative Final Exam covers Chapters 1~6 (only selected important topics)

NOTE: I reserve the right to modify/update the topics as appropriate.

NOTE: This class meets three times a week. Aside from the four hours that you spend in class each week, you should devote at least another 6~8 hours to studying on your own: reading the book and my lecture notes, working out your HWs, and solving some extra related problems for practice etc. You are responsible for all the materials/topics discussed in this class.

Active Learning: This course incorporates active learning throughout. You are strongly encouraged to preview the teaching materials in advance and be prepared for frequent class participation as well as individual and group learning activities.

Course Expectations and Requirements

Class Attendance: You are expected to attend classes as scheduled and be prepared to participate in discussions, in-class exercises, and problem presentations. Attendance is taken in each class, and it will contribute to your final grade. Each student is allowed up to 5 absences for the duration of the course, any further absences will affect their final grade. In addition, if an unavoidable situation prevents you from being on time or if you must leave early, **please minimize class interruption.**

Quizzes: There will be a 15~20-minute in-class quiz emphasizing the most recently covered topics roughly every two weeks, and there will be 7 in total where only the best 6 of them will be counted as portion for your final grades.

Examinations: There will be three midterm tests during the semester held in regular class: one in Sep, one in Oct, and one in Nov, and there will be one comprehensive common final exam at the end scheduled on **Wednesday, 12/10/2025, 10:00am-11:50am.**

Exams are scheduled at specific times, and you are expected to take them as scheduled. If you cannot attend an exam for a legitimate reason, please let me know (or have someone notify me if you're unable to) within 24 hours of the scheduled exam time. You will need to provide a brief explanation along with appropriate supporting documentation. If you know ahead of time that you will miss an exam, please contact me in advance so we can make the necessary arrangements. Missing an exam without following this procedure may result in a **GRADE OF ZERO**.

Dates of Midterm Tests: The exact midterm test dates will be announced at least one week in advance, both on Blackboard and by email. All tests will be taken during class time.

NOTE: Graphic calculators, cell phones, laptops, iPad, and any other electronic/mobile devices are **NOT** allowed in quizzes and tests. Once found, your quizzes/tests would receive **GRADE OF ZERO**. Repeated violations may be reported to the university as academic dishonesty.

Assignments: All homework assignments will be completed online in MyLab Math. Please check Blackboard announcements for instructions and due dates. If you cannot finish every question, do your best to complete as many as possible. Don't wait until the last day to start, as working on problems daily will help you stay on track. You may attempt each homework assignment multiple times to improve your grade.

You may have group/team discussions on homework assignment problems. However, you must write up the solutions on your own and truly understand the mathematics/algorithms involved. Be mindful of your academic integrity.

Grading Policy

Assignments: 10% Participation: 5% Quizzes: 15% Tests: 50% total Final Exam: 20%

A = 90-100% B = 80-89.9% C = 70-79.9% D = 60-69.9% F = 0-59.9%

Final Grade = $10\% \times \text{average of HWs} + 5\% \times \text{Participation} + 15\% \times \text{average of Quizzes} + 50\% \times \text{average of Tests} + 20\% \times \text{Final Exam}$

NOTE: *The final grade is a **weighted** average. Please do **NOT** simply take the average of all the grades posted on Blackboard as your final grade.

*The lowest quiz grade will be dropped at the end of the semester.

*The final examination is a comprehensive exam and is required of all students. The final exam may also replace a low or missing test grade.

*The grading policy may be amended during the semester at my discretion.

No Use of Generative AI Permitted

MATH 2312 assumes all students submitted work will be generated by the students themselves, working individually or in groups. Students should not have another person/entity do the writing of any portion of an assignment for them, which includes hiring a person or a company to write assignments and/or using artificial intelligence (AI) tools like ChatGPT. Use of any AI-generated content in this course qualifies as academic dishonesty and violates Texas A&M-San Antonio's standards of academic integrity.

Important Policies and Resources

Academic Accommodations for Individuals with Disabilities: Texas A&M University-San Antonio is committed to providing all students with reasonable access to learning opportunities and accommodations in accordance with The Americans with Disabilities Act, as amended, and Section 504 of the Rehabilitation Act. If you experience barriers to your education due to a disability or think you may have a disability, Disability Support Services is located in the Central Academic Building, Suite 210. You can also contact us via phone at (210) 784-1335, visit us <https://www.tamusa.edu/Disability-Support-Services/index.html> or email us at dss@tamusa.edu. Disabilities may include, but are not limited to, attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability-related needs with Disability Support Services as soon as possible.

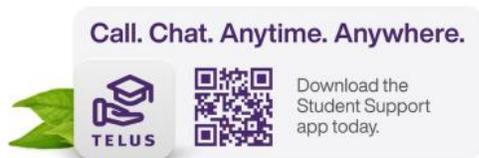
Academic Learning Center: The Academic Learning Center provides free course-based tutoring to all currently enrolled students at Texas A&M University-San Antonio. Students wishing to work with a tutor can make appointments through the Brainfuse online tutoring platform. Brainfuse can be accessed in the *Tools* section of Blackboard. You can contact the Academic Learning Center by emailing tutoring@tamusa.edu, calling (210) 784-1307, or visiting the Central Academic Building, room 202.

Counseling/Mental Health Resources: As a college student, there may be times when personal stressors interfere with your academic performance and negatively impact your daily functioning. If you are experiencing emotional difficulties or mental health concerns, support is available to you through the Student Counseling Center (SCC). To schedule an appointment, call 210-784-1331 or visit Madla 120.

All mental health services provided by the SCC are **free and confidential** (as the law allows). The Student Counseling Center provides brief individual and group therapy, crisis intervention, consultation, case management, and prevention services. For more information on SCC services visit <http://tamusa.edu/studentcounseling>

Crisis support is available 24/7 by calling the SCC at 210-784-1331.

Additionally, the TELUS Student Support App provides a variety of mental health resources to including support for in the moment distress, an anonymous peer-to-peer support network, mental health screenings, podcasts, and articles to improve your mental wellbeing.



Emergency Preparedness: JagE Alert is Texas A&M University-San Antonio's mass notification. In the event of an emergency, such as inclement weather, students, staff and faculty, who are registered, will have the option to receive a text message, email with instructions and updates. To register or update your information visit: <https://tamusa.bbcportal.com>
More information about Emergency Operations Plan and the Emergency Action Plan can be found here: <https://www.tamusa.edu/about-us/emergency-management/>
Download the SafeZone App (<https://safezoneapp.com/>) for emergencies or call (210) 784-1911. Non-Emergency (210) 784-1900.

Financial Aid and Verification of Attendance: According to the following federal regulation, 34 CFR 668.21: U.S. Department of Education (DoE) Title IV regulation, a student can only receive Title IV funds based on Title IV eligibility criteria which include class attendance. If Title IV funds are disbursed to ineligible students (including students who fail to begin attendance), the institution must return these funds to the U.S. DoE within 30 days of becoming aware that the student will not or has not begun attendance. Faculty will provide the Office of Financial Aid with an electronic notification if a student has not attended by the published Census Date (the first week of class). Any student receiving federal financial aid who does not attend prior to the published Census Date (the first week of class) will have their aid terminated and returned to the DoE. Please note that any student who stops attending at any time during the semester may also need to return a portion of their federal aid.

Writing, Language, and Digital Composing Center: The Writing, Language, and Digital Composing Center supports graduate and undergraduate students in all three colleges as well as faculty and staff. Tutors work with students to develop reading skills, prepare oral presentations, and plan, draft, and revise their written assignments. Our language tutors support students enrolled in Spanish courses and students composing in Spanish for any assignment. Our digital studio tutors support students working on digital projects such as eportfolios, class presentations, or other digital multimedia projects. Students can schedule appointments through JagWire under the Student Services tab. Click on "Writing, Language, and Digital Composing Center" to make your appointment. The Center offers face-to-face, synchronous online, and asynchronous digital appointments. More information about what services we offer, how to make an appointment, and how to access your appointment can be found on our website at <https://www.tamusa.edu/academics>.

Meeting Basic Needs: Any student who has difficulty affording groceries or accessing sufficient food to eat every day or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to submit a CARE referral (<https://www.tamusa.edu/university-policies/Student-Rights-and-Responsibilities/file-a-report.html>) for support. Furthermore, please notify the professor if you are comfortable in doing so. This will enable them to direct you to available resources.

Office Hours: All faculty with teaching assignments should include regularly scheduled office hours on each syllabus in addition to "by appointment." Please review your appointment letter for the number of weekly office hours you are expected to set. Regularly scheduled office hours should also be posted outside your office door (where applicable).

Military Affairs: Veterans and active-duty military personnel are welcomed and encouraged to visit the Office of Military Affairs for any question involving federal or state VA Education Benefits. Visit the Patriots' Casa building, room 202, or to contact the Office of Military Affairs with any questions at military.va@tamusa.edu or (210)784-1397.

Religious Observances: Texas A&M University-San Antonio recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided with an opportunity to make up any examination, study, or course work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes for regular session classes.

The Six-Drop Rule: Students are subject to the requirements of Senate Bill (SB) 1231 passed by the Texas Legislature in 2007. SB 1231 limits students to a maximum of six (6) non-punitive course drops (i.e., courses a student chooses to drop) during their undergraduate careers. A non-punitive drop does not affect the student's GPA. However, course drops that exceed the maximum allowed by SB 1231 will be treated as "F" grades and will impact the student's GPA.

Statement of Harassment and Discrimination: Texas A&M University-San Antonio is committed to the fundamental principles of academic freedom, equal opportunity, and human dignity. To fulfill its multiple missions as an institution of higher learning, A&M-San Antonio encourages a climate that values and nurtures collegiality and the uniqueness of the individual on our campus and within our state, nation, and world. All decisions and actions involving students and employees are to be based on applicable law and individual merit. Texas A&M University-San Antonio, in accordance with applicable federal and state law, prohibits discrimination, including harassment, on the basis of race, color, sex, religion, national origin, age, disability, genetic information, veteran status, sexual orientation, or pregnancy/parenting status. Individuals who believe they have experienced harassment or discrimination prohibited by this statement are encouraged to contact the University's Civil Rights Officer at 210-784-2061 or titleix@tamusa.edu.

Texas A&M University-San Antonio faculty are committed to providing a safe learning environment for all students and for the university as a whole. If you have experienced any form of sex- or gender-based discrimination or harassment, including sexual assault, sexual harassment, domestic or dating violence, or stalking based on sex, know that help and support are available. A&M-San Antonio's Title IX Coordinator can support those impacted by such conduct in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, and more. The university strongly encourages all students to report any such incidents to the Title IX Coordinator. Please be aware that all A&M-San Antonio employees (other than those designated as confidential resources such as counselors and trained victim advocates) are required to report information about such discrimination and harassment to

the university. This means that if you tell a faculty member about a situation of sexual harassment, sexual violence, or other related sex-based misconduct, the faculty member must share that information with the university's Title IX Coordinator (titleix@tamusa.edu, 210-784-2061, CAB 439K). If you wish to speak to a confidential employee who does not have this reporting requirement, you can contact the Student Counseling Center at (210) 784-1331 or visit them in Madla 120.

Pregnant/Parenting Students: Texas A&M-San Antonio does not require a pregnant or parenting student, solely because of that status or issues related to that status, to (1) take a leave of absence or withdraw from their degree or certificate program; (2) limit the student's studies; (3) participate in an alternative program; (4) change the student's major, degree, or certificate program; or (5) refrain from joining or cease participating in any course, activity, or program at the University. The university will provide such reasonable modifications to pregnant students as would be provided to a student with temporary medical condition that are related to the health and safety of the student and the student's unborn child. These could include maintaining a safe distance from substances, areas, and activities known to be hazardous to pregnant individuals and their unborn child; excused absences because of illness or medical appointments; modified due dates for assignments; rescheduled tests/exams; taking a leave of absence; and being provided access to instructional materials and video recordings of lectures for excused absences, if these would be provided to any other student with an excused absence. Pregnant/parenting students are encouraged to contact the Title IX Coordinator with any questions or concerns related to their status (titleix@tamusa.edu; 210-784-2061; CAB 439K). Texas A&M-San Antonio has also designated the Title IX Coordinator as the liaison officer for current or incoming students who are the parent or guardian of a child younger than 18 years of age. The Title IX Coordinator can provide students with information regarding support services and other resources.

Young Jaguars: can support parenting students with daycare who meet this criteria: Must be enrolled in classes at TAMUSA in the current semester. Must be Pell eligible or a single parent. They serve children ages 3 to 12-years-old. Children must be enrolled in Pre-K-3 through 6th grade. youngjaguars@tamusa.edu (210) 784-2636

Students' Rights and Responsibilities: The following statement of students' rights and responsibilities is intended to reflect the philosophical base upon which University Student Rules are built. This philosophy acknowledges the existence of both rights and responsibilities, which is inherent to an individual not only as a student at Texas A&M University-San Antonio but also as a citizen of this country.

Students' Rights

1. A student shall have the right to participate in a free exchange of ideas, and there shall be no University rule or administrative rule that in any way abridges the rights of freedom of speech, expression, petition and peaceful assembly as set forth in the U.S. Constitution.
2. Each student shall have the right to participate in all areas and activities of the University, free from any form of discrimination, including harassment, on the basis of race, color, national or ethnic origin, religion, sex, disability, age, sexual orientation, gender identity,

gender expression, and pregnancy/parenting or veteran status in accordance with applicable federal and state laws.

3. A student has the right to personal privacy except as otherwise provided by law, and this will be observed by students and University authorities alike.
4. Each student subject to disciplinary action arising from violations of university students' rules shall be assured a fundamentally fair process.

Students' Responsibilities

1. A student has the responsibility to respect the rights and property of others, including other students, the faculty, and administration.
2. A student has the responsibility to be fully acquainted with the published University Student Rules found in the Student Handbook, [Student Code of Conduct](#), on our website, and University Catalog, and to comply with them, as well as with federal, state, and local laws.
3. A student has the responsibility to recognize that student actions reflect upon the individuals involved and upon the entire University community.
4. A student has the responsibility to recognize the University's obligation to provide a safe environment for learning.
5. A student has the responsibility to check their university email for any updates or official university notifications.

We expect that students will behave in a manner that is dignified, respectful, and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation, or disability. Conduct that infringes on the rights of another individual will not be tolerated. Students are expected to exhibit a high level of honesty and integrity in their pursuit of higher education. Students engaging in an act that violates the standards of academic integrity will find themselves facing academic and/or disciplinary sanctions. Academic misconduct is any act, or attempt, which gives an unfair advantage to the student. Additionally, any behavior specifically prohibited by a faculty member in the course syllabus or class discussion may be considered as academic misconduct. For more information on academic misconduct policies and procedures please review the Student Code of Conduct (<https://www.tamusa.edu/university-policies/student-rights-and-responsibilities/documents/Student-Handbook-2022-23.pdf>) or visit the resources available in the OSRR website (<https://www.tamusa.edu/university-policies/student-rights-and-responsibilities/academic-integrity.html>).

Important Dates: Fall 2025 Regular 16-Week Session

August 25	First day of class
September 1	Labor Day Holiday – No classes
September 10	Census Date
November 14	Last day to drop with an automatic “W”
November 25	Last day to withdraw from the University
November 26	Study Day – No classes
November 27- 29	Thanksgiving Holiday – No classes
December 4	Last day of classes
December 5	Study Day – No classes
December 6-12	Final exams
December 16	Commencement

The complete academic calendar is available online:

<https://www.tamusa.edu/academics/academic-calendar/index.html>